

Date: Friday, 29/05/2009 3:37:38 PM
 User: Julie Dawson

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 407 HIGH AFT X-TUBE ASSEMBLY
 Job Number : 48292
 Estimate Number : 10528
 P.O. Number :
 This Issue : 29/05/2009 S.O. No. :
 Prsht Rev. : NC Part Number : D407667205
 Drawing Number : D407-667-245 REV F
 Project Number : N/A
 First Issue : / / Type : CROSSTUBES Drawing Revision : F
 Material :
 Previous Run : 48291 Due Date : 11/06/2009 Qty: 1 Um: Each

Written By :
 Checked & Approved By : Julie Dawson
 Comment : Est Rev:C 05.09.02 Add holes for compatibility with Bell
 Skidtubes KJ/JLM
 Est Rev:D Added Magnobond,Rubber Cushion & Clamps
 07-02-19 JLM

****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR
 GREATER****

Est Rev:E 08-05-22 add comment in seq. 6 and QC15 and
 QC5 DD verified by:EC
 Est Rev:F 08-06-12 add comment in seq. 24 DD verified
 by:EC
 Est Rev:G 08-08-19 revE as per dwg DD verified by:EC
 Est Rev H 09.01.06 ECN 08-562 EC verified by:DD

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D407-667-205 CHG006

2.0 PACKAGING 1 PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

3.0 D407667205TRN Crosstube Turning Detail



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

CROSSTUBE TURNING DETAIL

batch B47894

4.0 BENDING BENDING MACHINE - SKIDTUBES



Comment: LANDING GEAR RESOURCE 1

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio FT

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

09-06-09 (1)

6.0

CROSSTUBES

CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.

7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.

8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

9-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245

10- Scribe tube to identify on the inner chamfer in the cuff D# and B#

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

AWM 9-6-10 (1)

8.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

09/06/10 (4)

| W/O: | | WORK ORDER CHANGES | | | | | |
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Job Number: 48292

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

09/06/10 (1)

10.0

OUTSIDE SERVICE

OUTSIDE SERVICES-ENGINEERING



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 038Or

Issue P/O: 8959 LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

02/09/06/11 (1)

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage

Ensure copy of NDT results attached to work order.

02/09/11 (1)

12.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

ml 09 06 15

(1)

13.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 8:45

Finish Time: 9:10

PAINT:

Start Time: 3:15

Finish Time: 4:20

ml 09 06 16 (1)

14.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Wrap in plastic bag to protect from scratches

09/06/10

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Job Number:



Seq. #: Machine Or Operation: Description :

15.0 D2856400 Abrasion Strip



Comment: Qty.: 1.3524 f(s)/Unit Total : 1.3524 f(s)

Pick:

Qty Part number Description Batch
2 D2856-400(Cut to 7.73") Abrasion Strip

342437

ml 09 06 18

16.0 D2873043 Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch
2 D2873-043 Nut Plate

45369

ml 09 06 18

17.0 D2873045 Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch
2 D2873-045 Nut Plate

45210x1 44038x1

ml 09 06 18

18.0 D28941 2.750 Support



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number Description Batch
1 D2894-1 Support

43713

ml 09 06 17

19.0 D31901 Chafing Shield



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch
2 D3190-1 Chafing Shield

40109

ml 09 06 18

20.0 D3595063430 rubber cushion



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Rubber Cushion .63" X 4.30"

Batch: 43210

ml 09 06 17

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Job Number: 48292

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

21.0

MS20601AD4W8

RIVET



Comment: Qty.: 14.0000 Each(s)/Unit Total : 14.0000 Each(s)

Pick:

Qty Part number Description Batch

14 MS20601AD4W8 Rivet 109297 x 1/2 110399 x 2

ml 09 06 18

22.0

MS2192022

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-22 Clamp 109495

ml 09 06 18

23.0

MS2192025

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Clamp(per MIL-DTL-8783C)

Batch: 111883

ml 09 06 17

24.0

CROSSTUBES

CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8674. Install chafing shield as per Dwg D407-667-245.Note:

(3) top holes should be facing up.

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

3-Install support with magnobond and install clamps as per Dwg D407-667-245 using installaiton jig DT9025.

4-Torque clamps to 80-100 in lb

A/R Magnobond

Batch: 111249

EXP: 02/2010

ml 09 06 17 ①

4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

ml 09 06 18 ①

25.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

S 02/06/18

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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Job Number:



Seq. #: Machine Or Operation: Description :

26.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1
Pick Packing Kit

27.0

AN534A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
Bolt
Batch: M111425

9/6/18

SL

28.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
Nut
Batch: M111127

9/6/18

SL

29.0

AN510A

Bolt



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)
Pick:Packing Kit
Qty Part number Description Batch
10 AN5-10A Bolt M111425

9/6/18

SL

30.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
Pick:Packing Kit
Qty Part number Description Batch
4 AN5-32A Bolt M111425

9/6/18

SL

31.0

AN960JD516

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total : 18.0000 Each(s)
Pick:Packing Kit
Qty Part number Description Batch
18 AN960JD516 Washer M111279

9/6/18

SL

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Job Number: 48292

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

32.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

S 09/06/18

33.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and in kanban rack

Location: 53

E

9/6/19

Sp

34.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

09/06/22

Job Completion



U 09-06-19

B48292 D407-667-205

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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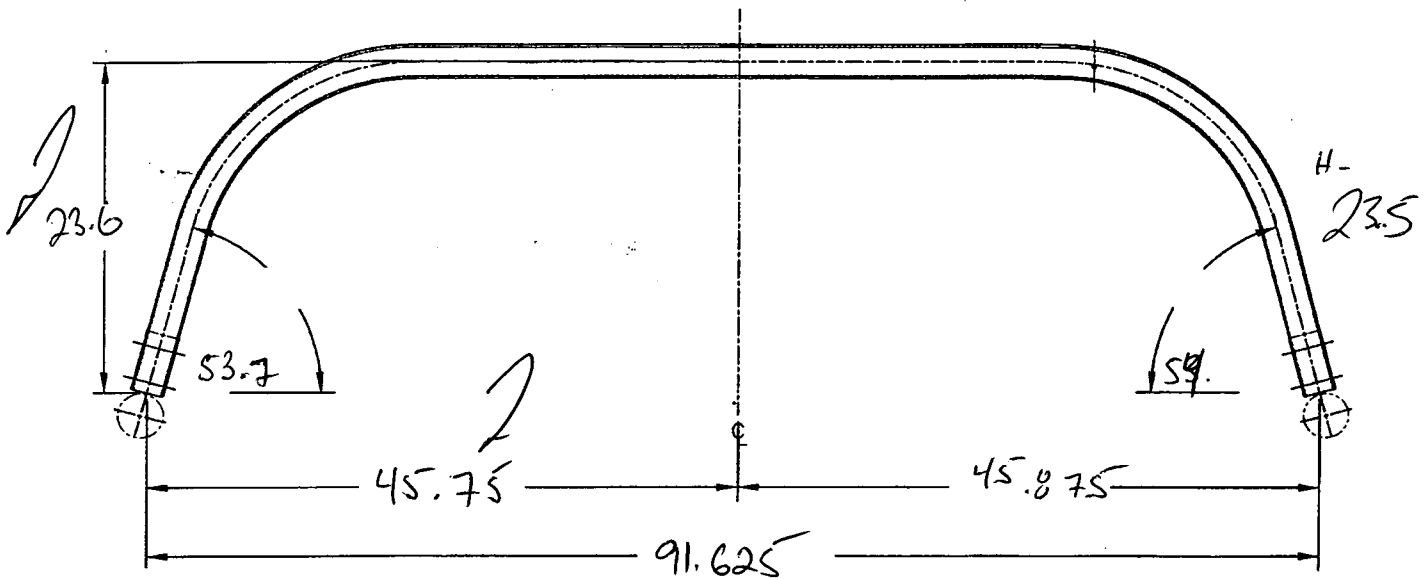
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NOTE: Date & initial all entries

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|---|--|----------------------------------|
| DART AEROSPACE LTD | | Work Order: 48292 |
| Description: Crosstube High Aft (407) | | Part Number: D407-667-205 |
| Inspection Dwg: D407-667-245 Rev: <i>DF</i> | | Page 1 of 1 |

| Required Dimension | Min | Max |
|--------------------|-------|-------|
| Height | 23.46 | 23.58 |
| 1/2 Span | 45.86 | 45.98 |
| Angle | 54 | 56 |
| Total Span | 91.72 | 91.96 |



| Comments |
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|-----------------|------------|
| QC15 Inspection | <i>ASW</i> |
| Date | 09.06.09 |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|-----------|--------------------------|--------------------|
| A | 07.02.06 | New Issue | KJ/JM <i>[Signature]</i> | <i>[Signature]</i> |

| W/O: | | WORK ORDER CHANGES | | | | | |
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NOTE: Date & initial all entries

| Item | QTY -245 | PART NUMBER | DESCRIPTION |
|------|-------------|----------------|--|
| 1 | X | D407-667-245 | CROSSTUBE ASSEMBLY (407 HIGH AFT) |
| 2 | 1 | D6011-115 | CROSSTUBE |
| 3 | 2 | D2856-400-773 | ABRASION STRIP |
| 4 | 2 | D2873-043 | NUT PLATE |
| 5 | 2 | D2873-045 | NUT PLATE |
| 6 | 1 | D2894-1 | SUPPORT |
| 7 | 2 | D3190-1 | CHAFING SHIELD |
| 8 | 2 | D3595-063-430 | RUBBER CUSHION |
| 9 | 14 | MS20601AD4W8 | RIVET (OR NAS9302B-4-8) |
| 10 | 4 | MS21920-22 | CLAMP |
| 11 | 2 | MS21920-25 | CLAMP (OR MS21920-24) |
| 12 | A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE) |

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-245" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 27.7 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- 16) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
08/11/06

| | | | |
|------------|---|----|----------|
| F | REFORMAT NOTES TO NEW STANDARDS (ZN B8-1); RELOCATED FLAG # 6 (ZN A8-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3) | RF | 08.11.06 |
| E | 8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR#08-21 AND ECR#1225 | MB | 08.07.24 |
| D | ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION | PH | 07.02.07 |
| C | ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES | PH | 05.07.26 |
| B | ADD CHAFING SHIELD | CP | 03.05.21 |
| A | NEW ISSUE | CP | 02.05.13 |
| REV. | DESCRIPTION | BY | DATE |
| DESIGN | 90 | | |
| DRAWN | RF | | |
| CHECKED | 90 | | |
| MFG. APPR. | 90 | | |
| APPROVED | 90 | | |
| DE APPR. | 90 | | |
| DATE | 08.11.06 | | |

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|--|------------------------|
| DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWING NO. D407-667-245 | REV. F SHEET 1 OF 4 |
| TITLE CROSSTUBE ASS'Y (407 HIGH AFT) | SCALE NTS |
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NO WORK ORDER
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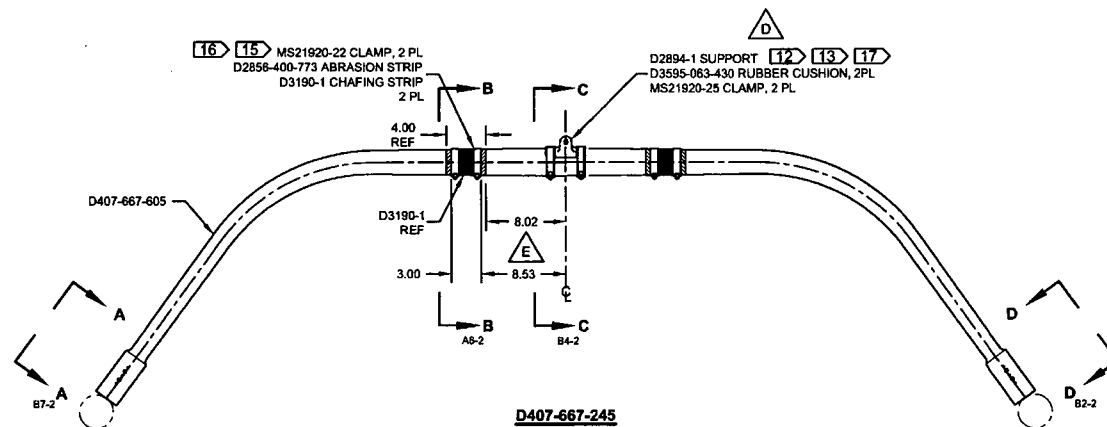
| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

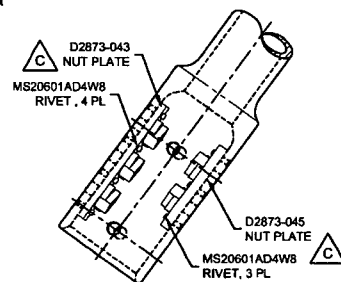
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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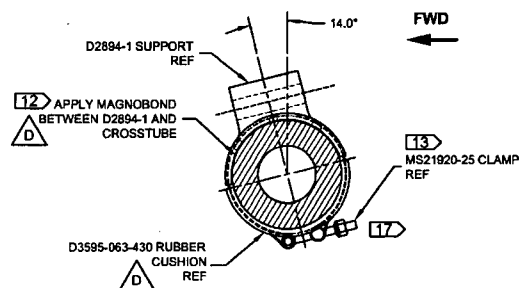
NOTE: Date & initial all entries



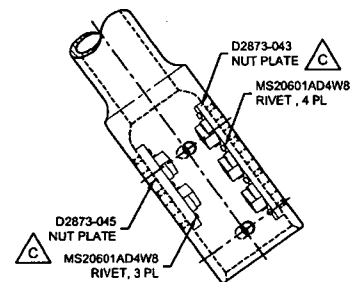
D407-667-245
ASSEMBLY DETAIL
(VIEW LOOKING FWD)



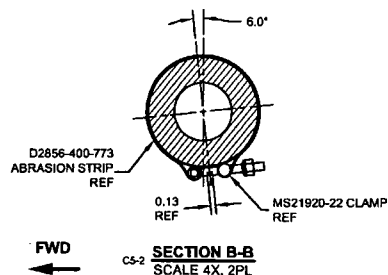
VIEW A-A CUFF DETAIL
SCALE 4X



SECTION C-C
SCALE 4X



VIEW D-D CUFF DETAIL
SCALE 4X



SECTION B-B
SCALE 4X, 2PL

RELEASED
08/11/06

| | | | |
|------------|----------|--|--------------|
| DESIGN | 90 | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | RF | DRAWING NO. | REV. F |
| MFG. APPR. | RF | D407-667-245 | SHEET 2 OF 4 |
| APPROVED | RF | TITLE | SCALE |
| DE APPR. | RF | CROSSTUBE ASS'Y (407 HIGH AFT) | NTS |
| DATE | 08.11.06 | <small>COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMBINED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> | |

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| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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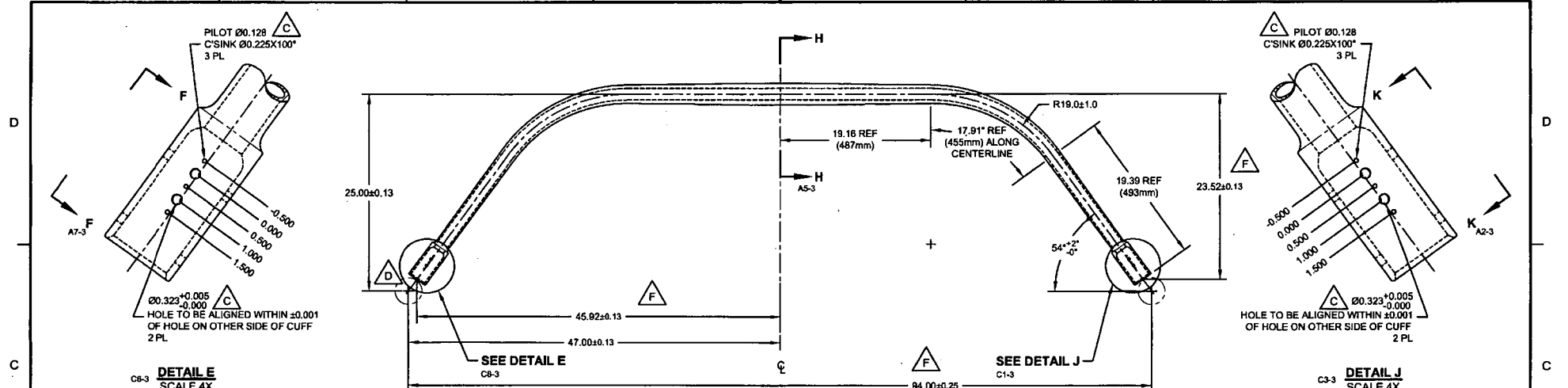
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

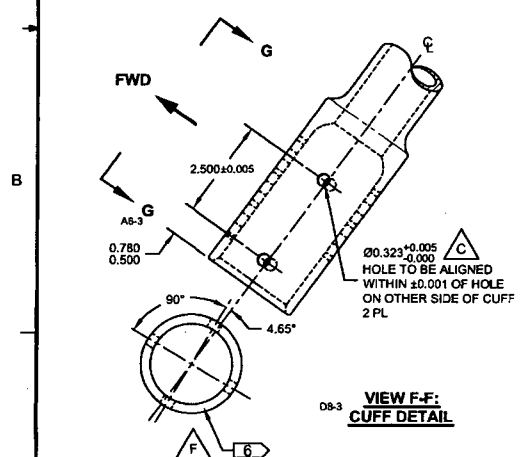


DETAIL E
SCALE 4X
(VIEW LOOKING FWD)

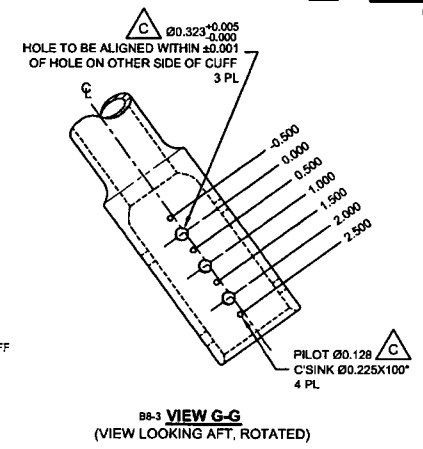
DETAIL J
SCALE 4X
(VIEW LOOKING FWD)

D407-667-605
BENDING AND DRILLING DETAIL
(VIEW LOOKING FWD)

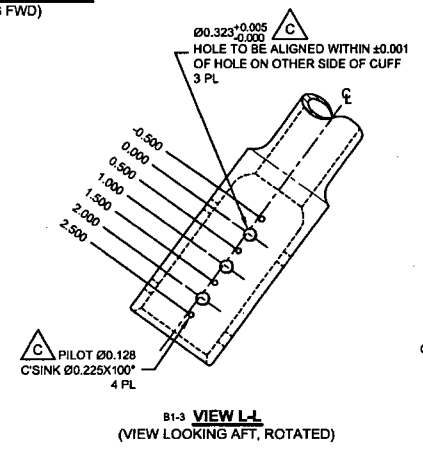
RELEASED
05/11/12



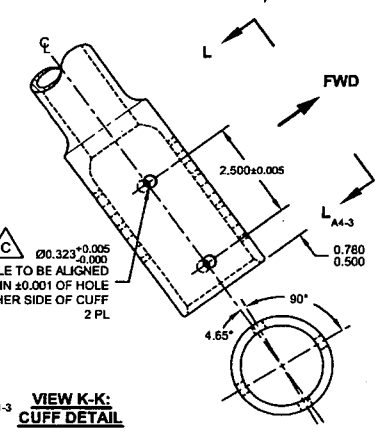
VIEW F-F:
CUFF DETAIL



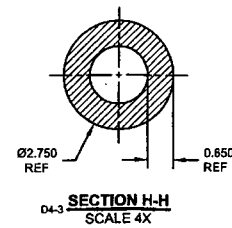
VIEW G-G
(VIEW LOOKING AFT, ROTATED)



VIEW L-L
(VIEW LOOKING AFT, ROTATED)



VIEW K-K:
CUFF DETAIL



SECTION H-H
SCALE 4X

| | | |
|--|----------|---------------------------------------|
| DESIGN | 90 | DART AEROSPACE LTD |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA |
| CHECKED | RF | DRAWING NO. D407-667-245 |
| MFG. APPR. | RF | REV. F |
| APPROVED | RF | SHEET 3 OF 4 |
| DE APPR. | RF | TITLE CROSS-TUBE ASS'Y (407 HIGH AFT) |
| DATE | 08.11.06 | SCALE NTS |
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| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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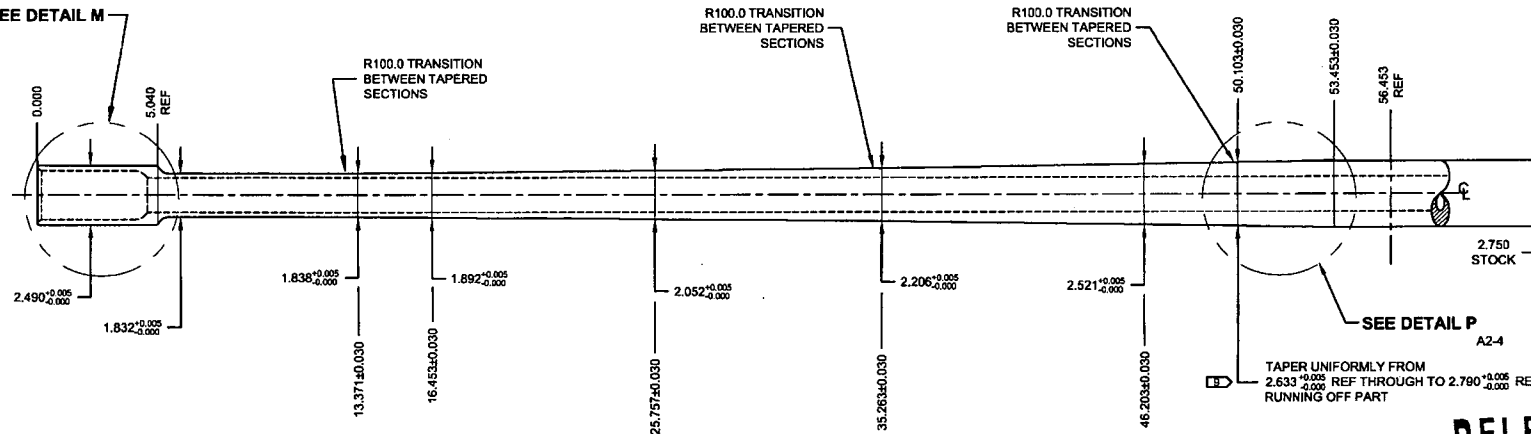
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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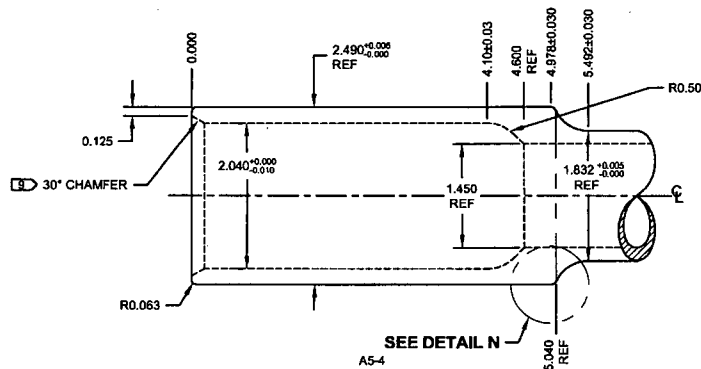
NOTE: Date & initial all entries

SEE DETAIL M
A7-4

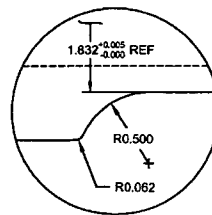


D407-667-245 MACHINING DETAIL

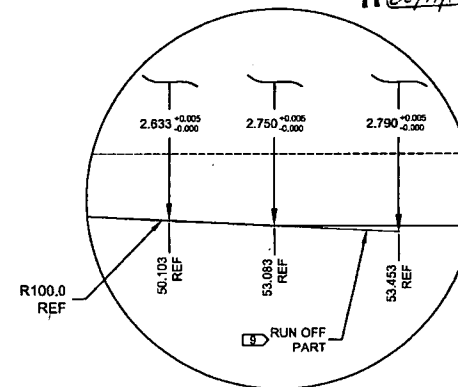
RELEASED
08/11/12 J/P



D8-4 DETAIL M: CROSSTUBE CUFF
SCALE 3X



B6-4 DETAIL N: CUFF TRANSITION
SCALE 2X



C1-4 DETAIL P: TAPER RUN-OFF
NOT TO SCALE

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|------------|----------|---|--------------|
| DESIGN | 9 | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | CP | DRAWING NO. | REV. F |
| MFG. APPR. | EP | D407-667-245 | SHEET 4 OF 4 |
| APPROVED | HP | TITLE | SCALE |
| DE APPR. | HP | CROSSTUBE ASSY (407 HIGH AFT) | NTS |
| DATE | 08.11.06 | <small>COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> | |

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| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 14941

| | | | | | | | |
|------------------|------------------------------|-----------------|---------------------|-----------|--|-----------------------------|----------|
| CLIENT | <u>DART Aerospace</u> | DATE | <u>JUNE 11-2009</u> | PAGE | <u>1</u> | OF | <u>1</u> |
| ATTENTION | <u>LINDA/CHATEL</u> | ACUREN JOB NO. | <u>188-08-1457</u> | TIME | AM <input checked="" type="checkbox"/> | PM <input type="checkbox"/> | |
| ADDRESS | <u>1270 ASBEE ST.</u> | PO/NO. | <u>8959</u> | | | | |
| | <u>HAWESBURY ON. K6H 1K7</u> | WORK LOCATION | <u>SHOP</u> | | | | |
| PROJECT | <u>F.P.I. ON CROSS TUBES</u> | ACCEPTANCE STD. | <u>ASTM 1417</u> | REV./DATE | <u>2007</u> | | |
| ITEM(S) EXAMINED | <u>5 PCS</u> | | | | | | |

| | | |
|-----------------|--|-------------------------------------|
| JOB DESCRIPTION | PROCEDURE NO. LT-XXXX REV./DATE | TECHNIQUE NO. LT-XXXX-XXX REV./DATE |
| PART NO. | MATERIAL <u>ALUMINUM</u> | THICKNESS <u>—</u> |
| SCOPE | <u>WET FLOURESCENT LIQUID PENETRANT INSPECTION</u> | |

| | | | |
|-------------------|---|-------------------------------------|---|
| TEST DETAILS | | | |
| METHOD | <input checked="" type="checkbox"/> FLUORESCENT | <input type="checkbox"/> VISIBLE | <input type="checkbox"/> WATER WASH |
| FAMILY BRAND | <u>MAGNA FLUX</u> | | <input type="checkbox"/> SOLVENT REMOVABLE |
| PENETRANT | <u>2LG7</u> | MINIMUM DWELL TIME <u>45</u> MIN. | <input type="checkbox"/> POST EMULSIFIED |
| PENETRANT REMOVER | <u>P20</u> | MINIMUM DRY TIME <u>>10</u> MIN. | BLACK LIGHT S/N |
| DEVELOPER | <u>SKD 502</u> | MINIMUM DWELL TIME <u>10</u> MIN. | <input type="checkbox"/> OUTPUT > 1000 μ W/cm ² |
| DEVELOPER TYPE | <input checked="" type="checkbox"/> NON AQUEOUS | <input type="checkbox"/> AQUEOUS | <input type="checkbox"/> AMBIENT < 2 fc |
| | <input type="checkbox"/> DRY | | LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT |
| | | | <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE |
| | | | OTHER |
| | | | LIGHT METER S/N |
| | | | CAL DUE DATE |

| | | | |
|---------------------|---------------------------------------|--|--|
| TEST SURFACE | | | |
| SURFACE CONDITION | <input type="checkbox"/> AS GROUND | <input type="checkbox"/> AS WELDED | <input type="checkbox"/> MACHINED |
| SURFACE TEMPERATURE | <input type="checkbox"/> < -4°C/ 20°F | <input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F | <input type="checkbox"/> SHOT BLASTED |
| | | | <input type="checkbox"/> CLEAN BARE METAL |
| | | | <input type="checkbox"/> 10°C/50°F TO 52°C/125°F |
| | | | <input type="checkbox"/> > 52°C/125°F |

| | |
|-------------|---|
| RESULTS- | <input type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL |
| JCS # | |
| 1- 48297 | ✓ |
| 1- 48291 | ✓ |
| 1- 48292 | ✓ |
| 1- 48290 | ✓ |
| 1- 48289 | ✓ |
| 1- 48392 | ✓ |
| 1- 48391 | ✓ |
| ml 09 06 15 | |

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

| | | |
|-------------------------|------------------------|---------------------|
| CLIENT REPRESENTATIVE | <u>MATTHEW MURDOCH</u> | DTR # |
| TECHNICIAN (SIGNATURE): | <u>Mike Johnston</u> | REPORT REVIEWED BY: |
| NAME (PRINT): | <u>Mike Johnston</u> | NAME |
| CGSB LEVEL | <u>II</u> | INITIALS |
| CGSB REG. NO. | <u>0066</u> | |